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PERFORATED STONES

FROM

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HENRY W. HENSHAW

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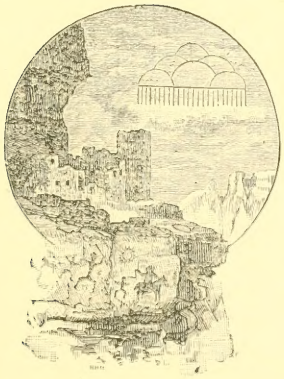

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CONTENTS.

	Page.
General character and conjectural uses of perforated stones	5
Uses of perforated stones	7
Weights to digging sticks in California	7
Digging sticks in various parts of the world	11
Gaming implements	16
Dice	18
Weights for nets	19
Spindle whorls	19
Club heads	20
Stone axes	21
Ceremonial staves	22
Peruvian star shaped disks	26
Missiles	27
Stones with handles	28
Ceremonial implements	30
Origin of perforated stones	32
Significance to the archæologist of medicine practices	34

ILLUSTRATIONS.

		Page.
FIG.	1. Perforated stone, Santa Rosa Island, California	5
	2. Perforated stone, Santa Cruz Island, California	5
	3. Perforated stone, Santa Cruz Island, California	6
	4. Perforated stones with incised lines, Southern California	6
	5. Perforated stone with groove around perforation, Southern California	10
	6. Supposed method of adjusting weight to digging stick	10
	7. Supposed method of adjusting weight to digging stick	10
	8. Hottentot digging stick, after Burchell	12
	9. Perforated stone from California, used in the game of itúrursh	16
	10. Perforated stone used as a die, Santa Rosa Island, California	19
	11. Ceremonial staff, New Guinea	24
	12. Ceremonial staff, New Guinea	24
	13. Star shaped disk mounted on handle, Peru	27
	14. Perforated stone mounted on handle, Los Angeles County, California	29
	15. Perforated stone mounted on handle, Los Angeles County, California	29
	16. Perforated stone mounted on handle, Los Angeles County, California	30

PERFORATED STONES FROM CALIFORNIA.

By H. W. Henshaw.

GENERAL CHARACTER AND CONJECTURAL USES OF PERFORATED STONES.

Few objects reward archæologic search in Southern California so frequently as the so-called "perforated stones," and in the collections of any size they form a considerable percentage of the objects represented. While, probably, nowhere in the United States are they so abundant as in California, they occur in perhaps every portion of this country, and also in other parts of the world, as in Europe, Australia, India, Africa, and South America.

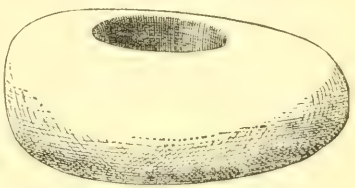

Fig. 1. Perforated stone, Santa Rosa Island, Southern California.

As in the case of many other aboriginal relics, it has been found difficult to assign definite uses to these perforated stones, especially in view of their great diversity as to size, shape, material, and the manner and extent to which they are finished. California specimens are made of sandstone, quartzite, steatite, and other kinds of stone—frequently, though by no means always, such as are rather easily worked. In Europe and in Peru specimens are found which are made of bronze. The California stones are most frequently circular or nearly circular, but occasionally they are irregularly oblong (Fig. 1). In the latter case the stones appear to have been left nearly or quite in their original shape, and specimens are sometimes seen which are two or three times longer than broad and with irregular outlines. In the case of such specimens it is evident that regularity of outline and fine finish were in no wise essential to their functions, whatever these may have been; nevertheless, such specimens are frequently highly polished, either on one side or on both sides, perhaps intentionally, or, more likely, from the friction of constant use. Occasionally they are more or less globular (Fig. 2)

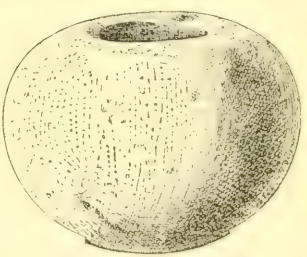

Fig. 2. Perforated stone, Santa Cruz Island, Southern California.

others tend to the pyriform shape (Fig. 3). California specimens vary in weight from an ounce, or even less, to several pounds; the largest specimen in the National Museum collection weighs seven pounds. Though not as a rule ornamented, California specimens are sometimes found which are decorated with lines and cross lines (Fig. 4). The symmetry of many of the specimens and the labor and care necessay to their production show that they possessed no little value in the eyes of their owners.

A summary of the knowledge respecting this class of relics and a large number of illustrations are to be found in a chapter by Prof. F. W. Putnam,[1] in which is cited a variety of evidence respecting the uses of these stones in various parts of the world, as hammer stones, weights for digging sticks, club heads, net sinkers, and spindle whorls.

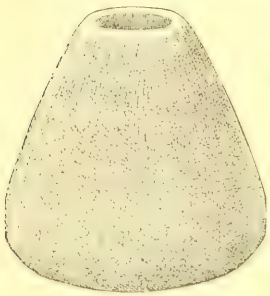

Fig. 3. Perforated stone, Santa Cruz Island, Southern California.

Discussing the California specimens, Professor Putnam says, p. 135:

> The particular uses to which these California stones were put will probably always remain conjectural, though it is evident that the wants or necessities they were intended to supply must have been very common, since they are found to be widely distributed among uncivilized tribes.

Again he says, p. 161:

> A careful study of the hundred examples of these stones from California, now before me, has confirmed my belief that they were used for various purposes by the old Californians, and that while some may, possibly, have been used as weights for digging sticks and for net sinkers, as Mr. Schumacher believes, it would certainly be going too far to include all the specimens in these two groups, even should we agree with Mr. Schumacher in regarding many of the smaller specimens as toys for children.

As the use of these stones in California thus remains to a large extent conjectural, a circumstantial account of the manner of their former employment, received directly from California Indians who had either used them themselves or seen them in use, will not be without value.

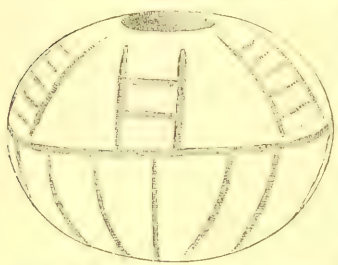

Fig. 4. Perforated stone, Southern California.

Having presented the evidence gathered in relation to the California specimens, brief mention will be made of certain perforated stones from other regions.

The present notice will not, however, attempt exhaustively to treat these relics as a class, as they occur all over the world, and especially will it not attempt to include all the various patterns and sizes of perforated stones found elsewhere in the explanation of their uses derived from the California Indians. For so widely do individual speci-

[1] Report U. S. Geog. Surv. West of the 100th Meridian, Vol. VII, Archæology.

mens differ in pattern and in the character of the perforations according to the localities where found, and even in the same localities, that on theoretical grounds it is extremely unlikely, as Professor Putnam remarks, that all were employed for the same purpose or perhaps even for similar purposes. On the contrary, such diversity would seem to indicate that they had several, perhaps many, different uses. On the other hand, the extremely close resemblance of occasional specimens found, for instance, in California, to others from remote parts of the world, cannot fail to suggest for such specimens a possible similarity of use and of origin. In this connection Professor Putnam says, p. 135:

> As it is more than probable that the same wants, under similar conditions, gave rise to the same means of satisfying them, we are justified in looking to the use made of similar stones by savage tribes of recent times for some explanation of the purposes to which they were applied by the Indians of California.

In other words, a satisfactory explanation of the use of any of these relics in any part of the world may, in the absence of more direct evidence, be applied to specimens of essentially similar character found elsewhere.

USES OF PERFORATED STONES.

By inquiry among the surviving Indians of Santa Barbara and Ventura Counties, California, where perforated stones are very numerous, it was learned that by them these relics were formerly put to three uses. Named in the order of their importance, these are: First, as weights to digging sticks; second, as gaming implements; third, as dies for fashioning tubes, pipes, and similar cylindrical objects.

Weights to digging sticks in California.—The evidence as to the former use of perforated stones as weights to digging sticks seems to be as complete as can be desired, in the absence, of course, of their observed employment. A Santa Barbara Indian, to whom a specimen was shown, a man sixty or more years of age, unhesitatingly affirmed, the moment he saw it, that it was a digging stick weight, called "al-stúr-ur." This implement, he said, was formerly in use among the women in his tribe. In describing it he said the stick must be strong and very hard. The wood usually employed grew only in the mountains and was called "burtch." The especial function of the digging stick was to dig a kind of onionlike root called "ci-hon." When in use the weight was slipped over the handle till it rested about the middle of the stick, like a collar. As my inquiries were made through the medium of an interpreter, I found it difficult to learn how it was held at this point, in the absence of a suitable stick to serve as an example, but it seemed likely, from the description, that the stone was supported by a knob or projection, natural or artificial. The sole function of the stone collar was evidently to add weight to the pointed stick and thus to increase its effectiveness.

The work of digging the root for which the digging stick was employed devolved almost entirely upon the women, assisted more or less by the boys and old men. A large and varied assortment of these

stones, including many different patterns in the museum of Mr. Clark, of Santa Barbara, who kindly offered every facility for examination, was pronounced by the Indian to belong to the class of digging weights. Even some very small perforated pebbles, the minute size of which seemed to preclude the idea of any economic function, he pronounced to be digging weights for children, remarking that everything used by the grown folks was duplicated in miniature for the children—a suggestion, by the way, which has occurred to more than one archaeologist, on purely theoretical grounds, and which is full of significance. The statements of this man were corroborated independently by his wife, of about the same age, to whom the digging stick had formerly been a familiar implement.

While visiting the San Buenaventura Indians, thirty miles distant, additional proof of the employment of these stones as digging weights was found. Here an expressive pantomime was performed by an old gray-haired woman which would have been quite enough to remove all lingering doubts as to one use, at least, of these stones. Visiting the old woman one day, I found her seated on the ground, which served as a floor to the hut, close to the fireplace. By way of introduction I showed her one of the digging weights, putting it into her hands without a word of suggestion or inquiry. Bringing it close to her eyes she scanned it eagerly, then broke into a laugh, gesticulating wildly, and with every sign of surprise and interest. Being questioned as to the cause of her pleasure, she said: "It is many years since I have seen one of these stones; where did you get it?" Being told that it was plowed up at Santa Barbara she assented to the probability of this statement, adding, "We used to bury them with the dead." In reply to the question "What do you know of its use?" she instantly seized a small stick from the fireplace and slipped the ring down to its middle, precisely as the Santa Barbara Indian had done, holding it there with the left hand, grasping the stick just below it to show that the middle of the stick was its proper position, and began to dig industriously into the dirt floor. This pantomimic explanation of the use of the stone weighted digging stick was almost as satisfactory as it would have been to come across her at work in the field digging roots with a veritable digging stick of the olden time. This woman also said that the bulblike root called "ci hon" was the principal root dug with the implement, this root forming an important article of food as well as of barter with other tribes. A second old woman living in the same village, who might have been perhaps seventy years old, but who passed as much older, subsequently corroborated the account in every particular.

An intelligent half breed of this same village, less than forty years old, from whom I derived much varied information, had no knowledge of the use of these disks as weights to digging sticks. This man, however, was too young to have personal knowledge of any but comparatively recent times, and it is probable that the stone weights had been

generally abandoned before his time. The digging sticks described by the half-breed were made of a very heavy wood and were not artificially weighted. The half-breed, however, stated that he had seen such a stick with a small stone sunk into the top parallel with its axis. This could hardly have been for a weight, but might have been a charm. Subsequently this Indian stated that on inquiry among the old people he learned that the stone disks were formerly used as weights to digging sticks on Santa Cruz Island, as also were disks of similar shape made of whales' bones.

With reference to the disuse of digging sticks in recent times, it may be remarked that, as the Mission Indians became more and more dependent for their support upon the whites and implements of their own manufacture fell into disuse, it would happen naturally that the method of evolution would be reversed, that stone weights would be first abandoned and the digging would be performed with a heavy stick alone. The stone weight was, in fact, a refinement never attained by many tribes. Subsequently the digging stick itself would fall into disuse, together with other primitive implements. Hence, a comparatively young Indian might be in utter ignorance of one of the chief functions of this or of any other specific class of implements.

With reference to the use of this class of stones as weights for digging sticks, the testimony of Mr. Paul Schumacher should not be overlooked — testimony which seems not to have carried the weight it deserves. While pursuing archæologic researches on the Island of Santa Cruz, Mr. Schumacher obtained from an aged half-breed a statement similar to the above as to the use of these perforated stones for weights to digging sticks. Much proof corroborative of the function of many of these stones as digging weights is to be derived from a study of the specimens themselves and of their fragments, and this testimony did not fail to impress Mr. Schumacher strongly. He says:[1]

> These implements — as are so many others that have a hole, a notch, or other means of fastening a line — are often considered as sinkers. One of the less frequent types of net sinkers, indeed, resembles the weight for a digging stick, but yet there is as much difference between the two as between a mortar and an *olla*. The sinker is of a different material, is coarsely finished, the hole is much smaller and narrower in the middle, and is hardly ever drilled or finished by drilling, but simply pecked. My first impression on finding these perforated stones was that they were the heads of war clubs, to which those of a pear shape especially seem to answer. By examining a large number of fragments, however, I found most of the stone rings had been broken in two, parallel with the hole, which could not be caused by the side pressure of the club, but by a wedgelike action against the inner sides. The suggestion that these stones were weights for digging sticks, such as are still in use among the Hottentots, I received from an aged half-breed while working on Santa Cruz Island, two years ago, and I have since become convinced that such was their use. If we examine a stone ring which has done some service we find the hole shows a polish and fine striæ running lengthwise and wear on one end of the ring, imparted by the hand while in use and in carrying the digging stick, where it naturally would rest, with its projecting stone weight against the hand. I found some of the weights

[1] Eleventh Annual Report of the Trustees of the Peabody Museum, 1878, p. 265.

thus deeply worn, and by mounting one on a proper stick it fitted nicely to the grasped hand. I also noticed a specimen, among the many sent to the Peabody Museum, in which the hole had been enlarged in full width but in one direction only—making an elliptic hole—worn by the digging stick while worked, when its own weight could only act against the sides of the stick corresponding to the flattened ends of the wooden spade.

As further confirmation of the above view of the function of many of the perforated stones, derived from a study of specimens, it is to be particularly noticed that many of them have grooves worn around the perforations, which grooves appear on one side only, and this the polished side (Fig. 5).

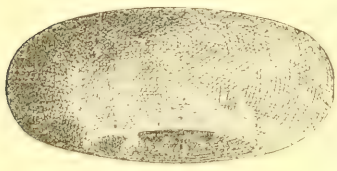

FIG. 5. Perforated stone with groove around perforation, Southern California.

The polish and wear on one side of the stone collar are undoubtedly to be attributed, as suggested by Mr. Schumacher, to the fact that in use the weight rests upon the closed hand. Perhaps, indeed, in many cases the left hand, grasping the stick about the middle, served as the only check to the weight, and kept it from slipping farther down. This supposition would explain my inability to obtain from any of the Indians a clear idea of the supposed method of permanently retaining the collar in its proper place near the middle of the stick. But in the specimens above referred to the grooves around the perforations require another explanation. Their origin, perhaps, may best be accounted for on the supposition that the stone collar rested on a natural knob or on an artificial protuberance, as, for example, a knot of rawhide or rope secured to the stick by the use of asphaltum. This supposed method is represented in Figs. 6 and 7. Even if the weight rested neither upon a natural knob nor upon an artificial protuberance, a ledge or collar would soon be formed around the stick as the weight slipped and fell home at each blow, if, as is probable, the stick tapered from the top or handle end to the middle, where it was adjusted to the size of the hole

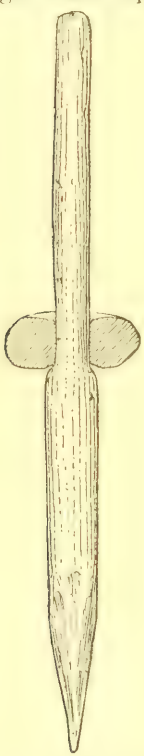

FIG. 6. Supposed method of adjusting weight to digging stick.

FIG. 7. Supposed method of adjusting weight to digging stick.

The above information furnished by four Indians, independently of one another, every one of whom had either seen the implement in use or had used it, together with the collateral evidence to be derived from a study of the specimens, would seem to be satisfactory proof of the employment of many of these perforated stones in this part of California as weights to digging sticks.

As roots were not only used largely for food by these tribes, but were bartered with other Indians both on the islands and inland, a great number of digging weights must have been employed in the numerous villages. Accordingly, in the use of perforated stones as digging weights, I am inclined to believe we have their most common and most important function, at least in this part of California.

Digging sticks in various parts of the world.—The use of pointed sticks for digging roots has by no means been confined to the Indians of California. These sticks have been observed in actual use among many uncivilized peoples, though not always artificially weighted.

Lewis and Clarke speak of the use of this implement among the Clatsop, one of the Chinook tribes. They say:[1]

> The instrument with which they dig up roots is a strong stick, about three feet and a half long, sharpened and a little curved at the lower end, while the upper is inserted into a handle, standing transversely, and made of part of an elk or buck's horn.

The transverse bar on the end of the handle is an evident improvement on the straight stick, since it can be pressed against the breast and the stick driven into the ground with ease.

The digging stick has also been observed in use among the Sioux by S. R. Riggs, J. Owen Dorsey, and others.

Stephen Powers,[2] writing of the Yuki of California, among whom the digging stick is employed to obtain worms for soup and for other purposes, speaks of a woman as "armed with her 'woman-stick,' the badge of her sex, which is a pole about six feet long and one and a half inches thick, sharpened and fire hardened at one end." Again, speaking of the Modok, he says, p. 256: "With a small stick, fire hardened at the end, a squaw will root out a half bushel or more [of kais roots] in a day."

Numerous digging sticks, or, more properly, spades, for they are used more to plant corn than to dig roots, are in the National Museum from Zuñi. The Zuñi have hit upon a device similar to that invented by the Chinook. The spade is a natural branch about three feet long, pointed and flattened, and having a projecting stump at a convenient distance down, so that the foot can be employed to press it into the earth.

[1] History of the Expedition under the Command of Captains Lewis and Clarke. Allen edition. Vol. II, p. 134. Harper and Brothers, 1842.

[2] Contributions to North American Ethnology, Vol. III, p. 13[illegible]

A similar improved digging stick has been invented by the New Zealanders and is described as follows:[1]

Their only instrument for tillage was "a long narrow stake sharpened to an edge at one end, with a short piece fastened transversely at a little distance above it, for the convenience of pressing it down with the foot."

The digging stick was used among the Figians as an agricultural implement, as described by Williams in his Figi and Figians, and quoted by Lubbock, Pre-Historic Times, p. 468, 1878.

It was also employed by the Tahitians, and is described by Wilson, quoted by Lubbock (op. cit., p. 484), as "instruments of hard wood, about five feet long, narrow, with sharp edges and pointed. These they used as spades or hoes."

The use of the stone weighted digging stick seems to have been very common in South Africa. As, however, perforated stones from this region have often been classed as weapons, several extracts will be given to show the nature of the testimony upon which both uses have been maintained.

Fig. 8. Hottentot digging stick, after Burchell.

Edgar L. Layard[2] makes specific mention of the digging stick in South Africa and of the stone weights, although the use assigned to the latter is at second hand. Discussing stone implements, he says:

Secondly, the perforated round stones found all over the colony. These vary in size and shape, and are as globular as a common ball. They were said to have been used even in later days by the bushmen for the purpose of weighting their bulb-digging sticks. They are described by Patterson and the older authors on South African travel.

The following is from Burchell.[3] Not only is the use of the digging stick affirmed, but an illustration shows the manner of wedging the stone to the handle:

We were visited by two natives * * * out in search of wild roots * * * The other carried, what my Hottentots called a *graafstok* (a digging stick), to which there was affixed a heavy stone to increase its force in pecking up bulbous roots. The stone, which was five inches in diameter, had been cut or ground, very regularly to a round form, and perforated with a hole large enough to receive the stick and a wedge by which it was fixed in its place.

Reference to Fig. 8, below, a copy of Burchell's illustration, will show how similar is the weight to some of the California specimens.

Rev. J. G. Wood[4] gives the following account of the digging stick of the Hottentots:

[1] Dieffenbach's New Zealand, Vol. II, p. 11, as quoted by Sir John Lubbock (Pre-Historic Times, p. 475, 1878).

[2] Jour. Anthrop. Inst. Great Brit. & Ireland, Vol. I, 1872, appendix, p. c.

[3] Travels in the Interior of Southern Africa, Wm. J. Burchell, Vol. II, p. 29 and figure on page 45, 1824.

[4] Uncivilized Races of Men, Vol. I p. 231, 1870.

This is nothing more than a stick of hard wood sharpened at one end, and weighted by means of a perforated stone through which it is passed, and which is held in its place by a wedge. With this rude instrument the Hottentot can break up the ground faster than might be imagined, but he oftener uses it for digging up wild plants, and unearthing sundry burrowing animals, than for any agricultural purposes.

Edward T. Stevens also alludes to the use of these disks as digging weights by the Bechuanas, and to what is probably a secondary use in preparing food. He says:[1]

In the Christy collection are some perforated stone disks, five and one-half inches in diameter, used for crushing or grinding grasshoppers, spiders, &c., by the Bechuanas of South Africa, who regard these insects as forming a valuable article of food. When digging wild roots, they put this stone upon the digging stick to give it greater weight. A specimen of such a digging stick, with the stone attached, is in the Museum of the Missionary Society, London.

Rev. Langham Dale is thus quoted on the same subject:[2]

The illustrations of various implements which I had sent him [Rev. Mr. Kronlein], when exhibited to the people, were recognized as of things known to them. The grain crushers and the perforated stones are evidently the most modern. It seems to be acknowledged that a stick was forced into the perforated stone, and so used by the old Hottentot warriors as a weapon in time of war and also as a tool to dig roots out in time of peace; for these uses I have the direct testimony of the missionary at Wapperthal, in the Clanwilliam division, and of others. I shall continue to collect evidence bearing on the problem of the age of these implements; at present the probability is that they have been in use at no distant day among Bushmen and Hottentots.

With reference to a portion of the above statement it may be said that it would seem in the last degree improbable that the warriors of any tribe of savages would deign to use in actual war a domestic implement, particularly as on the theory of an interchangeable function the warrior's weapon would have to be taken from the hands of the women; equally improbable is it that the warriors would permit a weapon to be degraded to domestic use. Moreover, against the idea of this interchangeable function is the fact that for effective service as club heads it would seem to be necessary that the perforated stones should be permanently attached to the handles.

Rev. J. G. Wood,[3] in his comments on the above statement, takes similar ground against their use as weapons, adding that, so far as he knew, "none of the Hottentot tribes used stone weapons."

Carl L. Griesbach[4] thus speaks of the same implement:

A singularly shaped tool is employed by the Bushmen, consisting of a rounded stone perforated for the passage of a stick, which is used for digging up roots, and may also be employed as a weapon.

The latter author clearly affirms their use as weights to digging sticks, while only stating that they *may* have been employed as clubs.

[1] Flint Chips, p. 95, 1870.
[2] Jour. Anthrop. Inst. Great Brit. & Ireland, Vol. I, p. 347, 1872.
[3] Op. cit., p. 348.
[4] Op. cit., p. cliv, Appendix.

Mr. John Sanderson,[1] in a paper on stone implements from Natal, even more explicitly affirms the use of perforated stones as weights to digging sticks. He says:

At the same time there are two facts to which I wish to direct attention: one is that certain implements of stone are still in use among the native races, among which are perforated balls employed to give weight to digging sticks, and stone hammers.

With equal explicitness the same use is stated in a note by Dr. Macalister:[2]

Another implement not uncommon among them was a heavy stone fastened to the thicker end of a pointed stick, sometimes 3 feet long, though occasionally not more than half that length, its use being either to dig up edible roots or to make holes in search of water.[3]

On the other hand W. D. Gooch[4] is inclined to discard the digging weight theory, and to class all perforated stones from Africa as weapons, at least so far as their primary use is concerned. Referring to a Natal specimen, he says:

I consider from its form that it has been intended as a weapon of offense, and I do not think it was mounted on a handle, because one portion of the periphery has been flattened so as to admit of its being firmly grasped in the hand, which it fits very comfortably, and thus held to have been used in striking forwards and downwards, so as to inflict a severe blow, calculated to give a quietus to an adversary. * * * On the other hand, its sharp edge and apparent fashioning to the hand are suggestive of its use as a sacrificial instrument similar to that used by certain Polynesians.

This specimen appears to differ somewhat from the perforated stones elsewhere described, and to be, as Mr. Sanderson terms it, "unique." If originally designed for either of the purposes mentioned by Gooch, it is difficult to understand why this stone was perforated. He continues:

Throughout the greater portion of South Africa, reaching from Cape Agulhas in the south to the Transvaal in the north, occur round stone implements perforated and fashioned into a globular form. To my mind these were all fashioned for the purpose of use as clubs, to be mounted on a stick thrust through the perforation, and secured by wedges and by hide.

* * * * * * *

I am aware that it has been received as an opinion that they were only intended as *weights* for the purpose of assisting the aborigines in digging for roots, on which they feed at certain times. In the Christy collection is a stick so arranged with the prong of an antelope horn at the point, and I have heard of many instances of their present use in this manner among the Hottentot and Bushmen tribes in Cape Colony. I believe, however, that the aborigines using them *now* are only utilizing the stones fabricated by their predecessors for a different purpose, as I can find no record of any native being found able to make a similar stone. * * *

In any case, I believe they have only been employed secondarily as digging stick weights, and primarily were undoubtedly clubheads; as such I here deal with them.

[1] Jour. Anthrop. Inst. Great Brit. & Ireland, Vol. VIII, p. 16, 1879.

[2] Op. cit., Vol. X, p. 460, 1881.

[3] Holub's Seven Years in South Africa, Vol. II, p. 439.

[4] Jour. Anthrop. Inst. Great Brit. & Ireland, Vol. XI, p. 128, 1882.

Further on[1] the writer somewhat modifies his statement, that all were used as clubheads, by suggesting that the stone disks may have been employed to give added weight to the spears used in killing large game.

It will be seen from the above quotations that while the employment of perforated stones in Africa as weights to digging sticks is to be regarded as an established fact, the implements appearing to have been seen frequently in actual use there, so much cannot be said in regard to the supposed use as clubheads. No one appears to have seen them in the hands of Bushmen or Hottentot warriors, nor apparently do any of the mounted specimens which have been collected resemble what may be termed the club type so closely as to make their classification as such at all certain. It is not at all unlikely that their use in Africa as digging stick weights may indeed be secondary, but of this there does not appear at present to be sufficient proof.

The fact as stated by Gooch that the Bushmen who have used them recently, or even still use them, no longer make them, proves little or nothing. Precisely the same statement holds good of the stone arrowheads of the North American Indians. Until recently the Apaches, for instance, used stone arrowheads, and even prized them above the iron points, which latter they manufactured in quantity; yet, so far as I could learn from inquiry (in 1873), all the stone points in their possession had been found on the surface of the ground, and I could not ascertain that any of the tribe attempted their manufacture, though doubtless there were some of the older men who had not forgotten the art. It is one of many cases which might be cited where the use of implements has survived after the manufacture has been abandoned or forgotten. Such partial survivals may, perhaps, be regarded as the universal rule, not only regarding implements, but also the various arts of life, as the lower races abandon their own inventions and habits in favor of those of a higher civilization. It would be idle, then, to argue from the fact that since stone arrowpoints were in use after their manufacture had ceased that they were originally employed for a different purpose, and that their subsequent use as arrowpoints was only secondary, or that the people using them at present must have inherited them from a preceding and different race.

A moment's reflection will show that the use of digging sticks must have been universal among savage tribes. A pointed stick with which to dig roots is in truth an implement as natural to primitive man as is a stone for breaking nuts, acorns, &c. It survives to-day, not only among our own Indians and other barbarous tribes, but among the peasantry of Europe, and even in the hands of the modern gardener. It has been improved in several ways among different tribes, as by the addition of the crossbar by the Chinook, the Zuñi, and the New Zealanders, and the stone weight is simply one of these improvements which has by no means been invented or used by all tribes.

[1] Jour. Anthrop. Inst. Great Brit. & Ireland, Vol. XI, p. 131, 1882.

Gaming implements.—From the half-breed above mentioned I learned that by the Indians about San Buenaventura and on the islands many of the stone disks were used in a game called itúrursh. He certainly had a tolerably clear idea of the game, and gave a rather full account of it and of the court or prepared ground where it was played. His account was in brief as follows: A piece of level ground was selected for the court, which was made very smooth and hard and was bounded by four upright corner stones or stakes. The wooden lance employed was six or seven feet long and tapered at one end to a small point. At one corner of the court was stationed a man with a pile of disks, whose business it was to cast the disks. The player, lance in hand, stood on one side of the court, near the middle. Running a little distance the pitcher rolled a disk swiftly across the court, when the lance man darted forward and cast his lance, the object being to transfix the disk as it rolled past. A successful throw counted one point, ten being the game. Dr. W. J. Hoffman was informed that at Santa Barbara the bow and arrow were in use in this game in place of the lance, the object being to shoot the arrow through the rolling disk.

The game was usually played with two on a side, though occasionally four on each side took part. As is the case with nearly all Indian games, itúrursh was a great gambling game, and large amounts of "shell money" and other property were frequently staked on the chances of a single contest.

The perforated disk from California best adapted to play this game would seem to be the thin, flat variety, with rather large perforation, of which Fig. 9 is a good illustration.

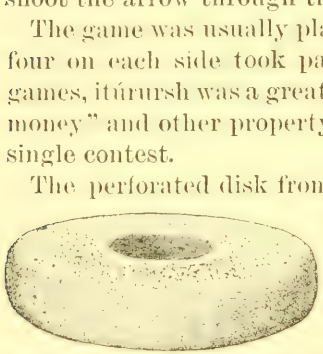

FIG. 9. Perforated stone from Southern California, used in the game of itúrursh.

The San Buenaventura Indian women, whom I have quoted above as to the digging sticks, were familiar with this game, but they affirmed that in their tribes the "hoop" used in playing the game was made of "twisted deerskin," twisted probably over a hoop of willow or other pliant wood. Precisely the same kind of hoop was used by some of the Tulare tribes to the east of the mountains and by the Indians of San Juan Mission, far to the northeast, as was affirmed by two women from these respective localities. It was also employed for the same game by the Indians of Los Angeles County, where the game was called "harariçuar" (W. J. Hoffman, in Bull. Essex Inst., XVII, p. 18, 1885). In a myth of the latter Indians (ibid.), given by Dr. Hoffman, occurs a mention of this willow buckskin ring, which seems to imply that its importance had invested it with mysterious powers or, perhaps, that it originated in the hands of the medicine man, and that its employment in the game above alluded to was in the nature of a secondary use. The myth runs as follows, page 21:

The father and mother left the hut together, and on seeking their daughter could not find her. "She has gone from shame," said the mother. "Where shall we find her?" The father took the twig of a willow, made a ring of it, and covered it with buckskin; this was thrown to the north, it returned again; he threw it to the south, and the same result; he then threw it east, then west, the ring following all the turnings and windings of the daughter. The father followed the ring until it came to the seashore. "She has drowned herself," said he, when he saw the ring enter the ocean.

The use of the perforated stones in games is noticed by Dr. Bowers.[1] He states that among the relics exhumed from the graves on Santa Rosa Island, California, were "perforated disks from the size of a silver half-dollar to five or six inches in diameter. These were used in games. It required either three or four to play a game with these disks. Two individuals, standing at a given distance, rolled the disk rapidly upon the ground between them, while one or two others stood at the side with sharpened sticks and caught the disks as they were whirled rapidly by."

Nearly the same game seems to have been in vogue among the Indians of Los Angeles County, California, who are of Shoshoni extraction. Alexander S. Taylor thus describes it in the California Farmer and Journal of Useful Science, July 17, 1863: "A game called 'hararienar,' consisted in rolling a ring, and two persons threw large lances of reed, and if the ring lay on one or the other, so it counted. Three times constituted a game."

A similar game was popular also among the Arikara, as is stated by H. M. Brackenbridge. According to George Catlin it was also in vogue among the Mandan, and among the Mohave of the Colorado, where the hoop was made of "elastic cord,"[2] probably rawhide. Dr. Hoffman alludes to the probable use of discoidal stones in playing "chungke,"[3] citing many references to show how widespread among our Indians is the game.

There can, indeed, be no doubt that the game of "itúrursh," which in its essential features answers to the game of "chungke" of the Eastern Indians, was universal or at least very general, not only among the California tribes, but also in one form or another among the other tribes of the United States. In the Eastern United States, as Georgia and Ohio, many of these disks are imperforate, while others are perforated. In the former case the game consisted in casting the lance so that the disk should fall upon the point or rest near it. H. Schliemann (Ilios, p. 584) found perforated stone disks or "quoits" at Hissarlik which apparently much resemble the thin, flat form of the stones from California. He considers that they were used in the game of quoits, which numerous allusions in the classic authors show to have been a

[1] Ann. Report Board of Regents of the Smithsonian Institution for 1877, p. 319, 1878.

[2] Pac. R. R. Rep., Vol. III. p. 114, 1856.

[3] Am. Nat., p. 478, 1878.

favorite pastime among the ancients, as it has been, to a less extent, in more modern times. The ancient and modern game of quoits differs considerably from the Indian game above alluded to, though it involves no new principle. Instead of a lance to cast at a rolling disk, the lance is reduced to a mere peg inserted into the ground, and the disk becomes a missile to cast at it, the object being the same in both games, viz, to transfix the disk. When the disk was imperforate, as it often was, the object was to cast it as near the stake as possible. It will be remembered that the "chungke" disks of the eastern Indians are also imperforate. It would seem, then, highly probable that the more modern method of playing quoits is in the nature of a development from a game closely resembling, perhaps, the game of "chungke."

The knightly game of riding at a ring, which was a favorite pastime of the mediæval knights and is even now practiced in the so-called tournaments of our Southern States, is probably to be regarded as another form of the same game which was developed when the horse became an essential part of the equipment of a warrior. In this form of the game the ring is suspended from above, and the object is to transfix and bear away the ring on the point of the lance while riding at speed.

Were we able to reconstruct the entire past history of such games as the above, whether played by the Indians of the United States or by mediæval knights, we should doubtless find that they originated in the practice of a warlike art. The lance is a favorite weapon of savagery, and that special means should be invented to develop skill in its use is not at all surprising. The rolling disk at which to cast the spear is the analogue of the target for the arrow. A practice originating as a means of developing an essentially warlike art and subsequently used as a pastime by the warriors would, in the course of time, inevitably become a mere game, though, of course, intentionally or unintentionally, always fulfilling somewhat of its original function, viz, the training of eye, hand, and foot.

Dies.—The San Buenaventura half-breed stated that some of the perforated disks of hard stone were made for the express purpose of fashioning pipes. The end of the stone to be fashioned was inserted into the hole of a perforated stone and turned by the hand till reduced to the proper shape. The perforated stone hence served as a kind of die, if the term can be employed correctly in this connection. It seems probable that this use of the perforated stones was a purely secondary one. Any of the disks of comparatively hard and rough stone would answer to round off and roughly finish the soft steatite pipes, and their use for this purpose would readily have suggested itself. Their employment in this way once understood, it is of course possible that the professional pipe makers, if there were such, may have found it convenient to make and to keep for this particular purpose different sizes of perforated stones, limiting them perhaps exclusively to this special function. In fact, Fig.

10 represents a specimen which appears to fully bear out this idea. It is sandstone, the rough surface of which admirably adapts it for grinding purposes. On either side a cavity is pecked, which is clearly intended to enable the fingers to firmly grasp the object. With such a tool, a suitable piece of steatite could readily be worked down to the cigarshaped pipes, of which such large numbers have been found on the islands and on the mainland in the neighborhood of Santa Barbara.

FIG. 10. Perforated stone used as a die, Santa Rosa Island, California.

Weights for nets.—From none of these Indians was I able to obtain proof of the employment of perforated stones as weights to fish nets or as club-heads. All disclaimed knowledge of their use for these purposes. This by no means proves, however, that these disks were not formerly put to these or to other uses besides those remembered. Events, habits, nay, even language itself, are readily forgotten by Indians, especially when, as in the present case, the survivors of a tribe are few in number and memory of the past is not constantly revived by conversation with their fellows. As to the use of perforated stones as weights to fish nets, it seems to be generally conceded that some at least of the many found in various parts of the world, especially near fishing grounds, are to be so classed. Generally, however, stones for this purpose seem to be roughly finished and of comparatively little value. That rings requiring the time and skill for their manufacture that many of the California specimens must have involved should be put to such use may be doubted. As of direct pertinence in this connection I may quote the reply of a Santa Barbara Indian to the question, "Why could not the highly finished stones called 'plummets' or 'sinkers' have been used as sinkers to a fishing line?" "Why should we make stones like that when the beach supplies sinkers in abundance? Our sinkers were beach stones, and when one was lost we picked up another."

Many specimens have undoubtedly been classed as net weights for no better reason than that nothing was known of their function and it was evident that they *might* have answered for net weights.

With reference to this tendency, Stevens remarks:[1]

> Many instances of the modern use of circular stones with drilled holes could be given which would show the necessity for caution in attempting to class *all* the ancient specimens as net sinkers.

Spindle whorls.—That perforated disks of stone and other material have been used as spindle whorls in various parts of the world there is abundant evidence. Such whorls are of small size and light weight. Although many of the California specimens are well adapted to this function, I am inclined to consider that they were not so used, but were in the nature of ornaments or charms, or were children's playthings. There is nothing whatever of an historical nature to indicate that any

[1] Flint Chips, p. 95.

of the California tribes were acquainted with the art of spinning. On the contrary, the Jesuit Fathers found them ignorant of the art, and themselves introduced it.

Club heads.—Archaeologic literature contains so many references to the employment of perforated stones as clubheads in various parts of the world and the stones themselves are so widespread that it might be inferred naturally that abundant and convincing evidence of their employment as weapons would be found, if they really served as such. This appears to be far from the case. In fact, nearly all the statements relative to their use as weapons appear to have been based on the character of the stones themselves and their supposed adaptability to the function assigned, and not to their observed use. The difficulty of arriving at a correct idea of the former function of these supposed club heads is increased by the fact that by far the greater number of specimens have been taken from graves, and their handles, if they ever had any, have long since disappeared. The small size of many specimens of perforated stones and the soft and pliable nature of the material of which they are composed at once remove them from the category of clubheads. Others, as the pearshaped variety, like Fig. 3, would seem to answer the requirements of clubheads better. It would seem, however, as if a perforation of the requisite size would weaken the stone too much for the rough service of a war club. A blow delivered by one of these stone collared clubs on the head or the body of an adversary would, indeed, be serious enough, but in action, if brought into collision with another club, one or both of the perforated stones would be almost certain to be shivered, rendering at least one weapon useless. A more effective club is made by attaching a solid stone to a handle by means of a rawhide band which encircles the stone in a groove pecked to receive it, or by inclosing the stone in a bag of rawhide, a continuous strip of which also frequently incloses and strengthens the handle. In both cases the attachment to the handle is easy and permanent. Such clubs have been in common use among the Shoshoni, Sioux, Apache, Eskimo, and other of our tribes until very recently. It is certain, however, that many of the clubs, or more properly hammers, of the character last described, were not intended as weapons, or, as they are popularly known and frequently described, "war clubs." Among the tribes of the Upper Missouri many of these clubs were exclusively women's implements, and were employed for driving tent pegs, breaking skulls to extract the brains, breaking bones for the marrow, and for other culinary and domestic purposes. Not infrequently they have been found on battlefields, where, especially when near villages, they have been used by squaws to dispatch the wounded enemy, and probably it is due to the latter circumstance, added to their apparent effectiveness as weapons, that an erroneous conception of their real function has gained currency. There is also a form of the "coup stick" of the Sioux tribes, which resembles the above implement in all respects except size. A specimen

is in the National Museum. It has a slender handle about three feet long, which is surmounted by a small eggshaped stone set in a band of rawhide, which also envelops and strengthens the handle. It was a point of honor with the Sioux warrior to touch the body of a slain enemy with the "coup stick," an act which brought him more renown than the actual killing. It is probable that this particular form of the "coup stick" is simply a modification of the war club. Many of the Apache war clubs which are stated to be veritable weapons of war resemble this last implement, except that the stones are larger and are mounted on short handles, which latter usually have a wrist thong attached.

Lewis and Clarke[1] describe a similar club, which they call by its Chippewa name, "poggamoggon," as in use in war among the Shoshoni.

A club, or hammer, for dispatching seals or halibut after they have been speared or hooked, is common, though not universal, among the Eskimo. It is usually very similar to the clubs described above and consists of a solid stone affixed to a short handle by an encircling band of rawhide. Some specimens are of large size and heavy weight. Another style of the implement is described by Mr. Stevens, who, however, calls it a "weapon," as consisting "of a stone ball, with a drilled hole, through which a strip of rawhide is passed to serve as a handle."[2] This is probably a rare form of the implement, as none of them appear in the extensive Eskimo collections of the National Museum, nor do they seem to be known to the several explorers of Alaska with whom I have conversed.

Lubbock describes as follows a still ruder kind of hammer used for a similar purpose by the Australians:[3]

> The hammer is used for killing seals or other animals, and for breaking open shellfish. The handle is from twelve to fifteen inches long, pointed at one end, and having on each side at the other a hard stone attached to the handle by a mass of gum.

The above references to clubs with imperforated stone heads might be materially increased in number, but they are sufficient to show that, among our own Indians at least, the stone clubs or hammers which are definitely known to be such are made of solid stones attached to their handles by leather, and that while these are used by some tribes as weapons they are more frequently employed as domestic implements; furthermore, that clubs with perforated stone heads are either not found at all or are very exceptional.

Stone axes.—In Great Britain and on the European continent a class of perforated stones occurs in great abundance which appears to have no exact analogue in this country. I allude to the perforated stones having a sharp or cutting edge on one or on each end and of various

[1] History of the Expedition under the command of Captains Lewis and Clarke. Allen ed. Vol. I, p. 363 Harper & Brothers, 1842.

[2] Flint Chips, p. 499; also quoted by Evans in Ancient Stone Implements, &c., of Great Britain, page 195.

[3] Pre-Historic Times, p. 454, 1878.

shapes. They have usually been classed as axes, hammers, and battle-axes. Many of them are described and figured by Evans.[1] When treating of the forms of these stones, he remarks:

> Looking at the whole series of instruments, it seems probable that they were intended to serve more than one purpose, and that while those of adzelike form were probably tools either for agriculture or for carpentry, and the large heavy axe hammers also served some analogous purpose, the smaller class of instruments, whether sharpened at both ends or at one only, may with some degree of certainty be regarded as weapons.

The origin and the function of these relics thus appear to have been by no means fully worked out. Among the specimens of the above class figured by Evans are some which, from their shape, degree of ornamentation, and their soft material, are extremely suggestive of the so-called "banner stones" from our mounds. Among the "perforated hammers" figured by Evans are a number which also appear to be more properly classed as ornamental or banner stones than as hammers. Such perforated stones, it would seem likely, may have originated from the weapon type, but the highly ornamental character of some of them and the very great amount of labor necessary for their production render it highly probable that their function was not that of actual weapons.

Perforated stone hammers were also found in numbers by Schliemann in the ruins of Troy. He also found perforated serpentine balls, apparently very similar to some California specimens. The use of these, he remarks, "is a riddle to us. May they, perhaps, have been attached to lassos for catching cattle?" This author also states that these steatite disks occur in Cyprus.

Ceremonial staves.— As having direct pertinence to the subject of stones of a ceremonial character, attention may be directed to a number of illustrations which appear in a work on New Guinea. In several places the author alludes to "stone clubs," and he figures[2] fifteen "stone clubheads." Most of them are of greenstone and belong to the warshape pattern; others are oval, made of limestone, and in shape much resemble those found in California and elsewhere. The author's reason for calling them clubheads is not given, and nothing whatever is said of their handles or of the manner in which they are hafted by the New Guinea natives. It would seem possible, then, that D'Albertis classed them as clubheads, as others have done, solely because of their supposed adaptability to this use, were it not that many times during his narrative he mentions stone clubs in connection with war parties. So that, unless we assume that such stone clubs were borne only by the chiefs as marks of authority, an assumption hardly permissible under the circumstances, the conclusion seems necessary that the stone clubs referred to, such as he figures[3] under the head of "stone

[1] Ancient Stone Implements, &c., of Great Britain, p. 192.

[2] New Guinea, L. M. D'Albertis, Vol. II, opposite p. 86.

[3] Loc. cit.

clubheads," are the perforated disks which were mounted on handles. However, on p. 136 he figures several of the "clubheads," giving them here a different name and a different function. In connection with the figures, he says:

> A piece of armor for war, probably worn also at festivals as a mark of authority, and which Maino calls "baratu," will give some idea of the capacity of these savages for carving and in working in very hard stone. A sketch of this will be of more value than any description. These baratus are colored in the same way as the arrows and the oars.

The four figures represent long, round staffs, the tops of which are broad and flat, curiously carved into open scroll work and profusely decorated with beads and feathers. At the junction of the decorated tops with the shafts are the perforated stones, which are elsewhere called "clubheads."

He figures another of these stone collared staffs on p. 194, Vol. I, which, though better adapted to the purpose of a weapon, resembles the others in type, especially in the length, slenderness, and smoothness of handle. This was collected at Dufaure Island, on the southeast coast of New Guinea. Of it, he says:

> We succeeded in getting some stone and wooden weapons, of different shapes, terrible things, which at one blow would crack the hardest skull ever framed. I observed two of different shapes, one with a smooth disk, thick in the center, and ending in an acute angle; capable, therefore, of cutting and bruising at the same time.

The author connects this style of implement with those above alluded to by stating[1] that "these deadly weapons have a hole in the center, and a piece of hard wood passed through it, varying in length from two to five feet, serves for a handle. Sometimes this stone center is cut into the shape of a star; this is a rarer shape." Several of the feather ornamented stone collared staffs, similar to those figured by D'Albertis, are in the collection of the National Museum. Two of them are here illustrated, Figs. 11 and 12 (p. 24).

The staff of the original[2] of Fig. 11 is made of a branch of hard wood, smoothed and polished, but still showing the inequalities of surface produced by the knots. It tapers gradually to a point. It is three feet four inches long and about one inch thick at the thickest part. It is split at the top, probably to receive a wedge, and the split is also utilized to receive a tuft of bright feathers, each one of which is carefully knotted into a small cord of twisted bark. The disk is seven and a half inches in diameter and is finished all around to a sharp edge, which is slightly abraded and nicked, though not enough to indicate that it has received very rough usage. Two bands of braided rattan, five and a half inches in all in length, encircle the staff near the top, and serve to keep the disk in place as well as to add to its ornamentation.

[1] New Guinea, L. M. D'Albertis, Vol. I, p. 194.

[2] No. 73377, National Museum.

The staff of Fig. 12 is similar to the other, but has, in addition to the rattan collar upon which the disk rests, a fringe of deer or other hide

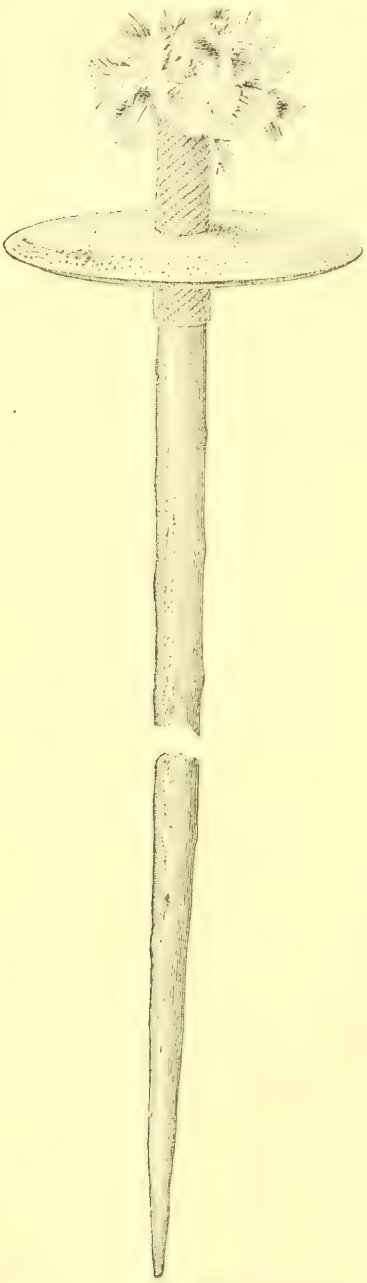

Fig. 11. Ceremonial staff from New Guinea.

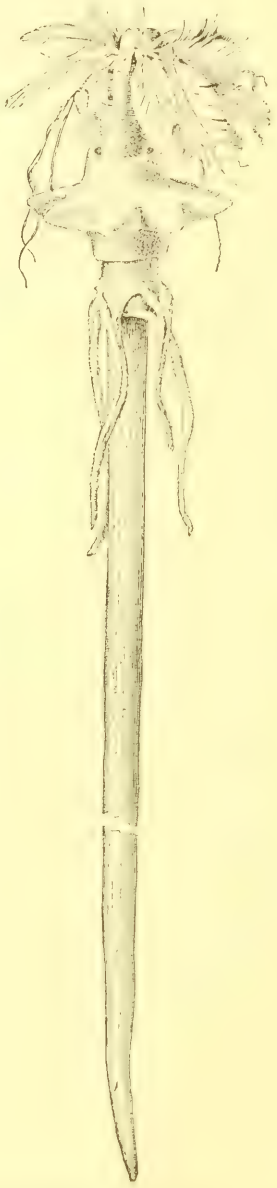

Fig. 12. Ceremonial staff from New Guinea.

below it, which, like the rattan, serves the double purpose of keeping the disk from slipping and of ornamentation. The disk has seven

spikes radiating from a vertical shaft. The disks especially are finely polished and exquisitely finished, and, as they appear to be made of very hard stone, their manufacture must have required great skill and long labor.

The keen edge on the last variety and the pointed knobs of the star shaped pattern certainly suggest that either kind is capable of inflicting a murderous blow, and their suggestive appearance is doubtless the chief reason for their classification as clubheads.

To derive a correct idea of their probable use, however, we must scrutinize not only the stones, but the shafts upon which they are mounted, and an examination of the specimens in the National Museum sufficiently proves that they cannot have been intended as weapons. The staves are too long and much too slender to serve as club handles. Instead of being roughened or knobbed to enable them to be firmly grasped, as is the case with war clubs generally, the handles are smooth and taper gradually, terminating in a sharp point, like the digging stick. Nothing could well be less suited for the handle of a club than one of these staves. Moreover, examination of the pointed ends shows by the wear and the scratched surfaces that they have been stuck repeatedly into the earth, which latter circumstance might of itself suggest the digging stick. However, the decorated tops and the general character of these specimens would appear to be sufficient proof that their function could not have been that of digging sticks. They doubtless were just what D'Albertis calls them, marks of authority or staves of office belonging to chiefs. Such staves as are here figured seem to be rather common in collections from New Guinea, and they appear to have been classed usually as weapons, notwithstanding their ornamental appearance and the very unweaponlike character of their handles. Thus Evans[1] refers to two such specimens in the Christy collection, stating that they "are in use, probably as weapons, in the southern part of New Guinea and in Torres Straits."

Professor Putnam[2] gives the following description of an implement from Queensland, Australia, remarking in a foot note that it is probable that the specimen "was originally from New Guinea or some adjacent island:"

> This consists of a handle of hard wood three and a half feet long, one inch in diameter at its largest end and tapering gradually to a sharp point. Two and a half inches from the large end there is fastened a disk of hard dark-colored stone, four and a half inches in diameter and three-quarters of an inch thick in the center, where it has a straight perforation, and through this the handle passes. This stone is finely polished and worked to a sharp or cutting edge, which has been slightly abraded by use. The stone is prevented from slipping down the stick by three rings, apparently made of split and braided bamboo. Above the stone is a similar ring, over which and covering the stick for the whole space above the stone, is fine braided work ending in a tuft of bright colored feathers.

[1] Ancient Stone Implements of Great Britain, p. 193, 1872.

[2] U. S. Geog. Surv. West of the 100th Meridian, Vol. VII, p. 143, Archæology, 1879.

Professor Putnam adds:

> Such an article as this might well be considered as a sort of baton; but after holding it in the hand for a moment it becomes evident that it would be as formidable as a weapon as it is ornamental as a badge of office. The elaborate finish of this weapon certainly precludes the idea of its having been intended as a digging stick, though its pointed end would allow of its being so used.

A second "clublike pike" from the island of New Britain, close to New Guinea, resembling those just mentioned, is also described by Professor Putnam (op. cit., p. 144), who remarks: "And as the stone with which this weapon is armed so closely resembles many of the hard, circular, perforated stones from California, the weapon is of great importance in suggesting a very likely use of stones of this character wherever found." The staff of this specimen is 4 feet 4 inches in length and ends in a long, sharp point. The specimen differs from the New Guinea example above referred to in being only slightly ornamented by "a single circle of small pieces of shell placed in the gum on each side of the stone," and in the manner the stone is secured to the staff, this being effected by means of a very tenacious gum.

The implements just described, especially the first, seem to closely resemble those in the National Museum collection and here figured, and, as suggested by Professor Putnam, a frightful blow could be struck with one of them; yet the highly decorative character of the implement as a whole, and especially the form of the handle, which is quite unsuited to the function of a club handle, should, it seems to me, be sufficient to exclude implements like these from the class of clubs or weapons and cause them to be placed in the category of ceremonial staves. Such appears to be one, at least, of their functions in New Guinea, and to this they seem to be better adapted than to any other.

The well known "banner stones" dug from the mounds of the Mississippi Valley were formerly considered by many authors as hatchet or club heads, but they are now, with much greater propriety, classed by most archæologists as "banner" or "ceremonial" stones and considered to have been used in festivals, dances, &c. They apparently belong in the same class as the above specimens from New Guinea.

Peruvian star shaped disks.— Bearing a close resemblance to the disks just mentioned are the star shaped perforated disks of copper and stone from the graves of Peru, where they are very common; and, like those from New Guinea, they, too, usually have been classed as clubheads. Many unmounted specimens of stone from which the handles, if they possessed any, had long since decayed, have been received at the National Museum, together with one[1] mounted on a fragment of its handle. Of the latter, which is from Ancon, Peru, a figure is here given (Fig. 13). The handle measures 27 inches in length, but from appearances it was originally considerably longer. It is about 1¼ inches thick at the thickest part. The handle of this particular specimen is too much decayed to afford very satisfactory evidence of its use, but there is little about

[1] No. 74076, National Museum.

it that is suggestive of a club handle. The method taken to secure the disk to the handle of this particular specimen is peculiar and somewhat suggestive of an ornamental purpose. A bunch of vegetable fiber, probably yucca, was glued to the stick, and the disk was fitted upon it, the loose ends of the yucca, looking like yellow hair, being allowed to project above and below the ring. Moreover, particles of the glue still adhere to the stick above and below the disk, as though the same fiber, or perhaps feathers, as in the New Guinea specimens, had been glued to it. Professor Putnam mentions a similar specimen also from an ancient grave at Ancon,[1] Peru. The fact as stated, that the handle tapers to a sharp, smooth point, as perhaps was the case with the National Museum specimen, certainly does not favor the idea of its having been used as a weapon. Evidence of another kind, however, has recently been adduced by Prof. Putnam, tending to show that such disks were actually employed as weapons; at the same time it is by no means unlikely that in Peru, as in New Guinea, the implement may have served also as a visible sign of authority.[2]

FIG. 13. Star shaped disk mounted on handle, from Peru.

Missiles.—I find a curious use assigned by Edward A. Knight[3] to these star shaped and other perforated stones from Peru. While describing various forms of slings, he says:

> Another mode of slinging is by means of a stick thrust through a perforated stone and whirled so as to discharge the missile when it has attained a maximum centrifugal motion.

His Fig. 32 shows two throwing stones from Peru, adapted to be slung by a stick which is thrust into the hole. The figure alluded to represents two stones, one of the star shaped variety, the other a circular perforated disk like many from California and elsewhere. Mr. Knight thinks that, although the star shaped whorls found in great quantities by Schlie-

[1] U. S. Geog. Surv. West of the 100th Meridian, Vol. VII, p. 146, Archæology.

[2] In the Twentieth Annual Report of the Peabody Museum, pp. 542, 543, 1887, Prof. Putnam mentions three human skulls in the museum which were received from the same region in Peru where occur the perforated star shaped disks. Concerning these the author remarks: "These exhibit circular indentures and holes, just such as would be made by blows given by pointed clubheads like those of which we are speaking; hence it is presumable that such were used as clubs, although similar objects were also mounted on staves, probably for ceremonial purposes."

[3] Ann. Rep. Board of Regents of the Smithsonian Institution for 1879, p. 232, 1880.

mann at Hassarlik may be spindle whorls, it is altogether probable that they were ammunition.

None of the authorities I have at hand mention a throwing stick which is adapted to the purpose of casting the perforated stones according to the above idea.

Colonel Lane Fox[1] mentions two forms of the "stick sling," one consisting of a stick in the upper part of which is a slit or hole in which the stone is put; and another, given by Stevens, in Flint Chips, consisting of a stick with a strap attached to one end. Whether these are the only forms of sling sticks I cannot say, although I have found no reference to other kinds.

As in the case of the perforated stones described as battle axes, it would seem as though it is the apparent adaptability of the stones in respect to their supposed function which led Mr. Knight to class them as "ammunition."

The fine finish of many of these specimens and the amount of time necessary for their manufacture would seem to be fatal to the theory of their employment as missiles. In this capacity they would be liable to be lost after the first throw, to say nothing of the fact that an ordinary, smooth, unfinished pebble slung from a ribbon sling, in the use of which the Peruvians are known to have been skillful, would be equally effective. Unless other and better evidence, therefore, can be adduced in support of the slinging stone theory, it is not likely that this view of the use of perforated stones will be accepted by archæologists.

Stones with handles.— In connection with the subject of ceremonial stones, attention may be drawn at this point to four unique specimens discovered by Dr. Stephen Bowers in a cave in the San Martin Mountains, Los Angeles County, California, and described in Pacific Science Monthly, June, 1885. They are unique because they are the only perforated stones thus far found in the United States which are attached to handles.

These specimens have been added to the collection of the Peabody Museum, and three of them are now before me for examination, through the courtesy of Professor Putnam, who has kindly permitted them to be figured for use in the present paper.

As the accompanying figures (Figs. 14, 15, and 16) afford an excellent idea of their peculiarities, a brief description will suffice. The disks are of a kind frequently found in California, and, in themselves, are not especially noteworthy. They are made of moderately hard stone, from 4¼ to 5½ inches in diameter. The holes were probably made by first being pecked from either side and subsequently drilled, and, as is frequently the case, are made smaller at the center, presenting somewhat the shape of a double cone. All three of the stones retain plain traces of paint markings, which, as will be seen in the illustrations, are disposed in regular patterns.

[1] Cat. Anthrop. Coll., 1877, p. 160.

It is to be noticed that the edges of the stones are smooth and show no evidences of abrasion by blows or other rough usage, a fact not at all agreeing with the idea that they served for hammers of any kind.

The handles are from 15 to 18 inches long, and are made apparently of rather tough wood. All three are natural branches, dressed only

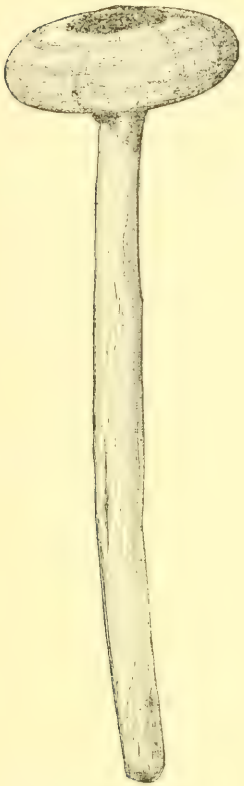

FIG. 14. Perforated stone mounted on handle, Los Angeles County California.

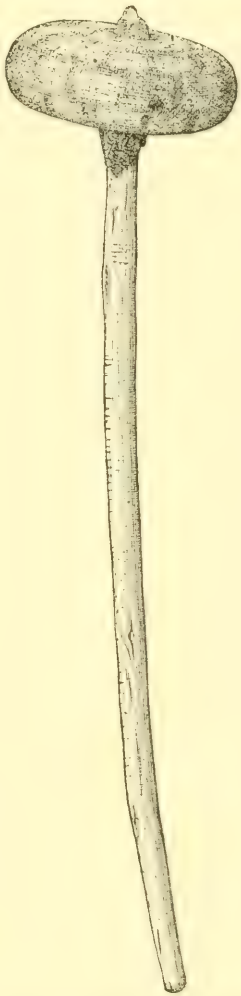

FIG. 15. Perforated stone mounted on handle, Los Angeles County California.

to the extent of removing the bark and paring off the twigs, so that the natural inequalities of the wood, the knots, &c., are plainly visible. They are smooth as though from the friction of much use. The handle of one (Fig. 16) is marked transversely by a series of cuts, disposed for the most part in regular rows, and presenting the appearance of tallies.

A most interesting feature of these specimens is the method by which the heads are fastened to the handles, which is done by asphaltum, a mineral which abounds in many localities of Southern California and was much used by Indians for fastening, mending, &c. The sticks are thrust through the stones so as to project slightly beyond, and as the holes are much larger at the circumference than at the center, the handles, if set at right angles to the stone, would bear only upon the center. Under the circumstances it would perhaps be a rather nice matter to adjust and cement them at right angles; and, either from accident or from design, they are set at an acute angle to the base of the stones, the angle being greater in the specimen shown in Fig. 16 than in the others. The unoccupied space above and below the stones is packed with asphaltum, which in one specimen (Fig. 16) projects above the stone in a knot or button. The cement thus employed affords a fairly strong attachment, but one that apparently would not stand very rough usage. The strength of the attachments is a matter of some moment, since one of the uses which has been suggested for these implements is as clubs. To have secured a much stronger attachment it would only have been necessary to drill out the holes, so as to permit a larger surface for the handles to bear upon, which, too, would have permitted the handles to be set at right angles to the stones.

FIG. 16. Perforated stone mounted on handle, Los Angeles County, Cal.

In connection with their possible use as clubs, it should be mentioned that the handles are neither roughened nor knobbed for secure grasping, but, on the contrary, are perfectly smooth. The handle of the one shown in Fig. 14 is stouter than either of the others, being about an inch in diameter at its largest part, stout enough to serve as a club handle; but the handles of the other two are much smaller, being each about one-half inch thick. So slender are they, and so heavily weighted, that it is evident they would be broken at a single hard blow. So similar, however, are the three in general form and features, that, notwithstanding the difference in the size of handles, it cannot be doubted that they were designed to fulfill the same function, and that what one is all are.

Ceremonial implements.—After careful consideration of these implements I am convinced that their peculiarities accord best with the idea that they were the property of medicine men or conjurers, probably

used in dances or superstitious ceremonies, as rain making, curing the sick, &c., this being the alternative suggested by Dr. Bowers. Not only does the character of the implements themselves agree best with this idea, but it is borne out also by the rest of the cave contents. The rudely painted notched sticks, the feather headdresses, and the bone whistles are all strongly suggestive of "medicine practices." Notched sticks similar to the ones found in the cave by Dr. Bowers are used in certain sacrifices by the Navajo, as Dr. W. Matthews informs me, and also disks of stone; the latter, however, are not perforated. Moreover, I was informed by an Indian in Santa Barbara County that feather bands or gorgets, of which a specimen similar to those found in the cave was shown me, were worn by all their medicine men in their ceremonies, and that the feathers of the red shafted flicker, which occur in the specimens found in the cave, were peculiarly efficacious in rain making. I was also told that bone whistles were used by the medicine men in their invocations. As already stated, therefore, a consideration of all the above facts justifies the conclusion, in my opinion, that the specimens in question, together with the rest of the contents of the cave, were the implements of trade of medicine men or the property of some religious order.

Significance of the staff.—The stick or staff as a badge of authority originates early in savagery, and it is interesting to observe that its use for similar purposes survives even in our modern civilization, as in England and elsewhere, where on stated occasions it is still to be seen in the hands of certain high dignitaries.

Among the Nez Percé, as Capt. Charles Bendire informs me, a wooden staff, gaily decorated with feathers and other ornaments, is carried on the right and another on the left of the order of battle.

In Africa the act of selecting a camp or of taking possession of a tract of land was indicated by the chief sticking a staff in the ground, and the sign of our own western Indians for possession is a motion of thrusting into the earth an imaginary stick, grasped with both hands. Ideas similar to the above may have been attached to the use of these staves in New Guinea; or in the ceremonies and dances of these savages they may have been borne aloft in the hands and thrust temporarily into the earth; or here and elsewhere they may have been used in connection with the custom of "tabu." Thus D'Albertis says:[1]

> On landing [Fly River], I saw a footprint, and, at the beginning of the path leading to the house, a stick was set up, at the top of which was a bit of bark. It was evident the stick had been placed there only a few minutes before. Is this a mark to indicate that this is forbidden ground? Is it a sign of Tabu? In Mibu Island they put a cocoa-nut at the top of a stick to signify Tabu; at Yule Island they set up sticks with *stone heads*.

It would be going much too far to assume on the strength of the evidence above adduced that all of the star shaped disks from Peru, to say

[1] New Guinea, Vol. II, p. 301.

nothing of the highly finished disks of the same general character from other parts of the world, are to be classed as the heads of ceremonial staves or medicine sticks or as "banner stones." While no such sweeping generalization is permissible, enough has been said to show that in the grouping of many of the perforated disks as weapons too much has been assumed on the strength of superficial resemblances, and that some of them, at least, are to be classed, with a fair degree of certainty, as ceremonial stones.

While it is undoubtedly true that we now know all we are ever likely to know respecting these relics from some sections, and that an insight into their former functions is to be derived only from the speculative inquiries of the archæologist, it is also probably true that in other localities, as in California, a partial knowledge, at least, may be gained by interrogating surviving individuals of the tribes, or cognate tribes, among which they were used. If the present paper accomplishes no more than to call attention to the uses of perforated stones in California and to the conflicting opinions of their uses elsewhere, and the consequent need of further light, its main purpose will be fulfilled.

ORIGIN OF PERFORATED STONES.

In the present imperfect state of knowledge respecting the perforated stones, when even their uses are to a large extent conjectural, it would seem to be idle to speculate concerning their origin and the course of evolution they have followed. Could it be proved that they have served generally, or even extensively, as the heads of war clubs this might, perhaps, be regarded as one at least of their primary uses, if not the most important one, while their other functions would naturally be regarded as of secondary character.

The conversion of a weapon to a ceremonial use is natural enough and quite in keeping with savage usage. In fact not rarely weapons are made for no other than ceremonial purposes, if, indeed, the term weapon properly applies to an implement primarily designed for other than warlike purposes. Thus Col. Lane Fox[1] states that "many of the clubs in Figi are constructed for ornamental and state purposes rather than for use, and are dedicated to a spirit when they are deposited in the Mbure." The clubs intended for use are generally smaller and more portable than the others. H. R. Schoolcraft notes a similar usage among the North American Indians,[2] and states that "clubs exhibited at the war dance or other ceremonial exhibitions are always *larger* than those intended for practical use and partake decidedly of a symbolical character."

Moreover the National Museum contains specimens of fictitious clubs which in some cases are nothing more than imitations in soft pine

[1] Cat. Anthrop. Coll., 1877, p. 73.

[2] Indian Tribes of the United States, Part I, p. 78.

wood, with protruding spikes made of thin sheet iron, the whole decorated with bands and strips of red cloth.

A very interesting case of the fetichistic use of what appears to be a genuine war club is recorded by Col. Garrick Mallery in a paper entitled "Pictographs of North American Indians," in the Fourth Annual Report Bureau of Ethnology, 1882–'83, p. 202, 1886. The pictograph represents a Sioux holding one of the ordinary solid stone headed clubs upright before his body in order to ward off the arrow of his assailant who is portrayed in the act of bending his bow. To some extent, at least, the weapon is here divested of its ordinary function and invested with secondary and peculiar properties. The case is of particular interest in the present connection, since, when once invested with the idea of a charm or fetich, the further step to a fetichistic use by a medicine man, or to a purely ceremonial use by a chief, and to other similar functions, would follow in the natural course of evolution. When intended solely for the latter functions form and size would naturally be modified, slightly at first, but more and more in the lapse of time, until at length both head and handle might become so changed as to be practically unfitted for use in war. Such may have been the origin of the ceremonial stones of New Guinea and other regions.

Recurring to the question of the origin of perforated stones, it is to be remarked that proof of their general use as weapons appears to be wanting, and it is doubtful indeed whether if in some parts of the world, as, for instance, in the United States, they have ever been thus employed. Even could it be safely assumed that their primary use everywhere has been that of weapons, it would increase rather than diminish the difficulties of understanding some of their secondary functions, as, for instance, a weight to a digging stick. From a weapon to a ceremonial staff or to a badge of authority, the transition is easy and natural, but the step from a weapon to a domestic implement is a much longer one and so unnatural that we may feel tolerably sure that the first function must be long forgotten ere the second is rendered possible.

The several very different uses to which perforated stones have been put in various parts of the world, to say nothing of their different patterns, would seem to suggest that the course of their evolution has varied as widely as their uses. Instead of having originated at a single center, and instead of having a single original function, they, like many other implements, probably originated at many independent centers, where the ideas that suggested them and the functions to which they were put may have been very different. Nor is it likely, if we are to judge by the several uses they have subserved in California in the same general locality, that they have anywhere been confined to a single function. The complete differentiation of implements and their limitation solely or mainly to one use is only possible in a state of high civilization like our own, where, indeed, specialization of function is rarely complete. Among barbarous people the specialization of form and

function is far less complete, and one form of implement, while perhaps suggested by a special want and having a peculiar fitness for some one function, must perforce do duty in many ways.

SIGNIFICANCE TO THE ARCHÆOLOGIST OF MEDICINE PRACTICES.

In conclusion I wish to record my belief that the practices of the medicine man and the implements of his profession, together with objects connected with superstitious practices generally, are too often lost sight of or ignored by the archæologist in the consideration of the possible uses of relics. When an article of unknown use is brought to light, the first question naturally is, to what practical use can it have been put? and too frequently the inquiry stops here and is limited to the economic side of the question, as though everything made or employed by the savage must have an economic function. Yet a large part of the life of the savage is passed in the observance of superstitious practices. In war or at peace, whether about to start on a hunting trip or to engage in the peaceful pursuits of agriculture, his movements are largely regulated by omens and signs more or less intimately connected with sorcery practices. Such practices, centered, as they are, in the medicine man, who is both priest and conjurer, require abundant paraphernalia suited to their important and mysterious functions. Doubtless much of the paraphernalia is of a perishable nature, and not likely to reach the hands of the archæologist. No one, however, can believe that all the "tools of the craft" are perishable — no one, at least, who has examined the contents of a medicine bag or inspected the accouterments of a medicine man when engaged in his office. Notwithstanding the universal practice of sorcery and the apparent fact that a larger or smaller number of the articles used in its practice must endure and be recovered by the archæologist, it is rarely, indeed, that such observances are appealed to in archæologic treatises to explain the possible use of implements of unknown function.

It is true that, from the very nature of the case, the function of such articles is by no means always indicated by their shape and their peculiarities, perhaps, indeed, is rarely thus disclosed; but by keeping in mind the importance of sorcery practices and the probable occurrence in the form of relics of the articles used in these performances, the archæologist will be less likely to err in his theories of function. Furthermore, it is probable that a careful study from the above point of view of relics now of unknown use will frequently reveal peculiarities sufficient to show their function.

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